CLAIMS

1. A method for producing endohedral fullerenes comprising:

introducing, into an evacuated vessel, an atom to be doped towards a hot plate therein to form a plasma flow of the atom; and

introducing fullerenes into the plasma flow, thereby allowing resulting endohedral fullerenes to be deposited on a deposition plate which has been set so as to be downstream of the plasma flow,

wherein the deposition plate is composed of a plurality of concentric separate plate components, and the deposition of fullerenes is allowed to occur while a bias voltage is applied to the central plate component.

2. A method as described in Claim 1 wherein a bias voltage $\Delta\phi ap$ in the range of $-5V < \Delta\phi ap < +20V$ is applied to the central plate component.

3. A method as described in Claim 1 or 2 wherein the radius R of the plate component at the center of the deposition plate is chosen to be R + 5 mm or less when the radius of the hot plate is R.

4. A method as described in any one of Claims 1 to 3 wherein means for measuring the density distribution of fullerene ions and doping atom ions in the plasma flow is provided ahead the deposition plate, and the bias voltage is adjusted based on a signal from said means.

5. A method as described in any one of Claims 1 to 4 wherein a cylinder whose inner cross-section has a radius of R + 5 mm or more is provided in the course of the plasma flow when the radius of the hot plate is R, and fullerenes are introduced from outside through an aperture formed on the wall of the cylinder.

6. A method for producing endohedral fullerenes comprising:

introducing, into an evacuated vessel, an atom to be doped towards a hot plate therein to form a plasma flow of the atom; and

introducing fullerenes into the plasma flow, thereby allowing resulting endohedral fullerenes to be deposited on a deposition plate which has been set so as to be downstream of the plasma flow,

wherein a cylinder whose inner radius is R + 5 mm or more is provided in the course of the plasma flow when the radius of the hot plate is R, and fullerenes are introduced from outside through an aperture formed on the wall of the cylinder.

7. A method as described in any one of Claims 1 to 6 wherein the atom to be doped is an alkali metal atom.

8. A device for producing endohedral fullerenes comprising:

an evacuated vessel;

means for forming a plasma flow of an atom to be doped;

means for introducing fullerenes into the plasma flow;

means for holding a deposition plate consisting of a plurality of concentric separate plate components which is set so as to be downstream of the plasma flow; and

means for applying bias voltages appropriately chosen independently of each other to the respective separate plate components.

9. A device as described in Claim 8 wherein formation of a plasma flow of the doping atom is achieved by introducing the doping atom towards the hot plate therein.

10. A device as described in Claim 8 wherein the bias voltage applying means is variable in its operation.

11. A device as described in any one of Claims 8 to 10 wherein the bias voltage $\Delta\phi ap$ applied to the central plate component is chosen to be in the range of $-5V < \Delta\phi ap < 20V$.

12. A device as described in any one of Claims 8 to 11 wherein the radius of the central plate component is R + 5 mm or less when the radius of the hot plate is R.

13. A device as described in Claims 8 to 12 wherein means for measuring the density distribution of fullerene ions and doping atom ions in the plasma flow is provided ahead the deposition plate, and the bias voltage is adjusted based on a signal from the means.

14. A device as described in any one of Claims 8 to 13 wherein a cylinder whose inner cross-section has a radius of R + 5 mm or more is provided in the course of the

plasma flow when the radius of the hot plate is R.

15. A device for producing endohedral fullerenes whereby an atom to be doped is introduced into an evacuated vessel towards a hot plate therein to form a plasma flow of the atom, and fullerenes are introduced into the plasma flow so that resulting endohedral fullerenes are deposited on a deposition plate which has been set so as to be downstream of the plasma flow, comprises, in the course of the plasma flow, a cylinder in which the inner cross-section has a radius of R + 5 mm or more when the radius of the plasma flow is R.

16. A device as described in Claim 14 or 15 wherein the cylinder is placed with respect to the deposition plate such that, when the distance between the downstream end of the cylinder and the deposition plate is 1d, and length of the cylinder is 1c, 1d □ 2 x 1c.

17. A device as described in any one of Claims 8 to 16 wherein the atom to be doped is an alkali metal atom.

18. A device as described in any one of Claims 8 to 17 wherein the plasma flow forming means comprises a hot plate and a nozzle through which an atom to be doped is introduced towards the hot plate.

19. A device as described in any one of Claims 8 to 18 further comprising a cooling means for cooling at least the portion of the wall of the evacuated vessel surrounding the space downstream of the downstream end of the cylinder.